REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections of record are respectfully requested.

Summary of Status of Amendments

In the present amendment, claim 1 is amended further defining the structure and arrangement of the reaction section relating to the reaction section being under pressure. In particular, claim 1 is amended herein to recite a reaction section which comprises a static mixer and is connected to the at least one container and the mixing vessel through a high pressure pump with a pressure up to 200 bar for introducing the fats and the alkaline solution to the reaction section; said reaction section being structured and arranged to enlarge border surfaces of a mixture in said reaction section and perform transesterification under pressure, and the pressure being reduced during transesterification.

Support for the amendment to the claims appears in Applicants' originally filed application, including page 4,line 21 to page 5, line 2.

Summary of Office Action

The following rejections are set forth in the Office Action:

(1) Claims 1, 3, 5, 25-32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bam et al. (hereinafter "Bam"), U.S. Patent No. 5,424,467, in view of

Assmann et al. (hereinafter "Assmann"), U.S. Patent No. 5,514,820, or Noureddini, U.S. Patent No. 6,015,440.

(2) Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bam, U.S. Patent No. 5,424,467, in view of Assmann, U.S. Patent No. 5,514,820, or Noureddini, U.S. Patent No. 6,015,440, and further in view of Borck et al. (hereinafter "Borck"), U.S. Patent No. 2,583,206.

(3) Claims 13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bam, U.S. Patent No. 5,424,467, in view of Assmann, U.S. Patent No. 5,514,820, or Noureddini, U.S. Patent No. 6,015,440, and further in view of Kiehtreiber, EP 0 535 290.

(4) Claims 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bam, U.S. Patent No. 5,424,467, in view of Assmann, U.S. Patent No. 5,514,820, or Noureddini, U.S. Patent No. 6,015,440, and further in view of Kiehtreiber, EP 0 535 290, and further in view of Muraldihara. U.S. Patent No. 5,482,633.

Consideration Of Supplemental Information Disclosure Statement

Applicants express appreciation for the inclusion with the Office Action of an initialed copy of the Form PTO-1449, whereby the Examiner's consideration of the Supplemental Information Disclosure Statement, filed September 13, 2004, is of record.

However, Applicants note that the initialed form is not completely initialed in that initials do not appear next to Database WPI, Section Ch, Week 199818, AN 1998-200910, dated 02/24/98 cited in the Other Documents section of the form.

Therefore, Applicants are submitting another copy of the form, and respectfully request that the Examiner initial this citation in order that the Examiner's consideration of each of the cited documents will be clearly of record.

Response to Rejections Under 103(a)

In response to the rejections set forth in the Office Action, Applicants respectfully submit the following.

Applicants' independent claim 1 is directed to an apparatus for producing fatty acid methyl ester, comprising at least one container for fats; a tank for alkaline solution; a tank for alcohol; a mixing vessel for compounding the alkaline solution and the alcohol; a reaction section which comprises a static mixer and is connected to the at least one container and the mixing vessel through a high pressure pump with a pressure up to 200 bar for introducing the fats and the alkaline solution to the reaction section; said reaction section being structured and arranged to enlarge border surfaces of a mixture in said reaction section and perform transesterification under pressure, and the pressure being reduced during transesterification; and a separation unit downstream from the reaction section.

The documents of record do not teach or suggest Applicants' apparatus whether taken alone or in combination.

The rejections contend that Bam discloses a reaction vessel 22 with moving impeller 44. A review of these portions of the apparatus disclosed in Bam reveals, at column 6, beginning at line 33 that, "The transesterification reaction between the alcohol

and vegetable oil is carried out in transesterification reaction vessel 22. To provide sufficient contact between the vegetable oil and the alcohol for the transesterification reaction to proceed, reaction vessel 22 includes an impeller 44 attached to motor 46. Motor 46 rotates impeller 44 so that it will agitate the reactor volume with just a slight amount of splashing."

Also, at column 7, beginning at line 11, Bam discloses that, "Vegetable oil and alcohol are introduced into the reaction vessel 22 from alcohol storage tank 20 and oil storage tank 24 that can be provided with pumps or be gravity feed tanks."

Still further, a review of the drawings of Bam, reveals that reaction vessel 22 is an open mixing vessel and there is therefore no pressure. The reaction vessel of Bam is open and is not designed to be under pressure.

Thus, Bam is directed to a reaction section which comprises an open mixing vessel that is not designed to be under pressure, and includes a stirrer in which the stirrer is rotated so as not to splash the liquid. Smooth stirring is desired in Bam! Thus, Bam does not teach or suggest each and every feature recited in Applicants' claims for at least this reason.

Moreover, while Bam can include pumps, there is no disclosure of a high pressure pump in Bam that connects the reaction vessel 22 with the oil storage tank 24 and the mixing vessel wherein the alcohol and catalyst of Bam are mixed. Bam only shows in Fig. 1 a pump in the line to the alcohol storage tank 20, and gravity feeds from the mixing vessel to the reaction vessel 22 and from the oil

storage tank 24 to the reaction vessel 22. Thus, Bam does not teach or suggest each and every feature recited in Applicants' claims for at least this reason.

The rejection merely indicates that the pump is not shown, and then makes naked assertions about a pump, **but does not include in any supporting documentation**, as required, to support these assertions.

In particular, the rejections contend that the pump in the apparatus of Bam meets the claims since the specific pressure at which the pump operates is merely a matter of intended use, and it is well known in the art that pumps are inherently capable of feeding reactants over a wide range of pressures, including the instantly recited pressures, by performing a simple calibration of the pump.

In contrast to these assertions, the rejections must establish by documentary evidence and must show that there is motivation in the prior art to modify the apparatus of Bam to provide a combination of elements which includes, amongst other features, a reaction section which comprises a static mixer and is connected to the at least one container and the mixing vessel through a high pressure pump with a pressure up to 200 bar for introducing the fats and the alkaline solution to the reaction section. In other words, the rejections must establish that there is motivation for one having ordinary skill in the art to modify Bam to include a pump as recited in Applicants' claims. Moreover, the rejections must establish motivation for including a high pressure pump with a pressure up to 200 bar.

The rejection asserts that is well known in the art that pumps are inherently capable of feeding reactants over a wide range of pressures, including the instantly

recited pressures, by performing a simple calibration of the pump. However, Applicants respectfully once again submit that a high pressure pump is a structural limitation that must be given weight in an apparatus claim. For example, one having ordinary skill in the art would readily understand that regular pumps are constructed and arranged to operate at lower pressures than high pressure pumps which are constructed and arranged to operate at lower pressures than ultra high pressure pumps. For example, regular pumps are constructed and arranged to operate with a pressure up to 40 or a maximum of 60 bar (4 or 6 MPa), high pressure pumps are constructed and arranged to operate with a pressure up to 200 bar (20 MPa), and ultra high pressure pumps are constructed and arranged to operate at 200-400 bar (20-40 MPa).

Moreover, the Examiner's attention is once again directed to the bottom of page 4 of Applicants' specification wherein it is disclosed that an advantage of the present invention is that the pressure at the beginning of transesterification can be up to 200 bar, and Applicants' apparatus is structured and arranged therefor.

Still further, the Examiner's attention is once again directed to the page Pumping of Liquids and Gases, page 10-29, 1999 by the The McGraw-Hill Companies; 150J3W High Pressure Pump, downloaded from the Internet Site http://www.jetech.com/products/150j3w.asp on June 12, 2004; Model 600G3 High & Ultra-High Pressure Pump, downloaded from the Internet Site http://www.jetech.com/products/600_g3.asp on June 12, 2004; and Bran+Luebbe, NOVAPLEX pumps downloaded from the Internet Site http://www.spxprocessequipment.com/sites/branluebbe/global/eng/products/process/no

vaplex/html/novaplex.html under Data Sheet (Download PDF) on June 14, 2004, which were submitted on September 13, 2004. These documents show that one of ordinary skill in the art would recognize that high pressure pumps are structured and arranged to be high pressure pumps. **The Examiner has not addressed these documents in the rejections, but has merely made the above-noted naked assertions.**

The rejections assert some type of calibration, but do not indicate what this calibration is or why one having ordinary skill in the art would have been motivated to perform some type of calibration on any pump in Bam, let alone a pump included in apparatus in the manner recited in Applicants' claims.

Moreover, the Examiner is reminded for inherency to be present the **Examiner has the burden of showing that the result indicated by the Examiner is the necessary result, and not merely a possible result**. In re Oelrich, 212 U.S.P.Q. 323 (CCPA 1981); Ex parte Keith et al., 154 U.S.P.Q. 320 (POBA 1966). The fact that a prior art article may inherently have the characteristics of the claimed product is not sufficient. Ex parte Skinner, 2 U.S.P.Q.2d 1788 (BPAI 1986).

As the Board of Patent Appeals and Interferences states in Ex parte Levy, 17 U.S.P.Q.2d 1461, 1463:

> However, the initial burden of establishing a prima facie basis to deny patentability to a claimed invention rests upon the examiner. In re Piasecki, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984). In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983); In re Oelrich, 666 F.2d 578, 212 USPQ 323 (CCPA 1981); In re

Wilding, 535 F.2d 631, 190 USPQ 59 (CCPA 1976); Hansgirg v. Kemmer, 102 F.2d 212, 40 USPQ 665 (CCPA 1939).

In the instant situation, the Examiner has not provided a basis in fact and/or technical reasoning to reasonably support the determination that the asserted inherency necessarily flows from the applied prior art.

Still further, the rejection improperly tries to support the rejection with the assertion that it is well known in the art that pumps are inherently capable of feeding reactants over a wide range of pressures. However, Applicants respectfully submit that an obviousness rejection cannot be supported by mere allegations that an element of Applicants' claims is well known in the art. The Examiner is reminded that a rejection must be based upon documentary evidence, and not merely Official Notice. In this regard, the Examiner's attention is directed to MPEP 2144.03 wherein it is noted that, "If the applicant traverses such an assertion the examiner should cite a reference in support of his or her position." In the instant situation, Applicants respectfully submit that the rejection is improper as not utilizing documentary evidence to support the position taken in the rejection. **Thus, in the event that the rejections are maintained, Applicants request that the rejections be modified to include documentary evidence supporting the position taken in the rejections.**

Moreover, attention is directed to In re Ahlert and Kruger, 424 F.2d 1088, 165 USPQ 418, 420-421 (CCPA 1970), which is cited in MPEP 2144.03. In Ahlert, at 165 USPQ 421, it is stated that:

Typically, it is found necessary to take notice of facts which may be used to

> supplement or clarify the teaching of a reference disclosure, perhaps to justify or explain a particular inference to be drawn from the reference teaching. The facts so noticed serve to "fill in the gaps" which might exist in the evidentiary showing made by the examiner to support a particular ground of rejection. We know of no case in which facts judicially noticed comprised the principal evidence upon which a rejection was based or were of such importance as to constitute a new ground of rejection when combined with the other evidence previously used.

In the instant case, the rejection improperly utilizes Official Notice, not to "fill in the gaps", but to provide part of the complete reasoning behind modification of the primary reference. Accordingly, Applicants submit that it is improper to take Official Notice in the instant case, and a reference must be utilized in the rejection that not only discloses Applicants' recited concept, but also provides motivation for modifying the documents to include Applicants' recited features. This would afford Applicants an opportunity to address issues of lack of motivation for combining separate disclosures as well as an opportunity to argue against any asserted combination. Thus, for example, an issue to be addressed is whether in the instant situation one having ordinary skill in the art would have been motivated to modify the primary reference.

Still further, the rejections recognize that Bam does not disclose a static mixer. However, the rejections try to overcome this further deficiency in Bam by relying upon the disclosures of Assmann or Noureddini to substitute for the reaction section 22 of Bam.

Assmann shows that the reaction mixture flows through a tube reactor, whereby the flow ratio in the tube is chosen such that the Reynolds number is larger than 2,300, preferably slightly above 10,000, according to the formula for the Reynolds number (total density x flow velocity x inner tube diameter / mixture viscosity).

As indicated in the specification and drawing of Assmann, this tube reactor is a simple tube, in which the desired Reynolds number is set to between 2,300 and 10,000 by accordingly choosing the diameter and the flow velocity (the total density and the mixture viscosity being constants). The hydraulic pressures occurring hereby amount to 2-10 bar at the beginning of the tube, which pressures incidentally correspond to a low-pressure transesterification, with retention periods of 1-10 minutes, with a corresponding unavoidable loss of pressure of approximately 1 bar over the tube length.

In this context, it is noted that the Reynolds number is a dimensionless flow number, whereby for a round tube a Reynolds number of below 2,320 shows a laminar flow.

In contrast, the reaction section according to Applicants' invention is a static mixer with special internal parts and not in a simple tube. The formula for the Reynolds number is not applicable to a reaction section according to the invention, or the Reynolds number cannot be calculated over the length of the reaction section.

Thus, one having ordinary skill in the art would not have combined the disclosures of Bam and Assmann. However, even if for the sake of argument the disclosures were combined, the above-noted deficiencies of Bam would not be overcome. Moreover, one having ordinary skill in the art would not have modified the reaction vessel 22 of Bam with the reaction tube of Assmann. In any event, even if the substitution were made, the mixer 2 of Assmann would be at most substituted for the mixing vessel of Bam and not the reaction vessel 22.

The static mixer of Noureddini serves merely to premix the reaction components. As described, the operation takes place at 70-80°C and the vapor pressure of 1-2 bar corresponding to this temperature, whereby this is the vapor pressure of methanol at 80°C and not a hydraulic pressure. As with Assmann, one having ordinary skill in the art would not have combined the disclosures of Bam and Noureddini. However, even if for the sake of argument the disclosures were combined, the above-noted deficiencies of Bam would not be overcome. Moreover, one having ordinary skill in the art would not have modified the reaction vessel 22 of Bam with the reaction tube of Noureddini. In any event, even if the substitution were made, the mixer of Noureddini would be at most substituted for the mixing vessel of Bam and not the reaction vessel 22.

Borck merely discloses an apparatus for homogenizing. One having ordinary skill in the art would not have combined the disclosures of Bam and Assmann or Noureddini with Borck. However, even if for the sake of argument the disclosures were combined, the above-noted deficiencies of Bam would not be overcome. Moreover, one having ordinary skill in the art would not have modified the reaction vessel 22 of Bam with Assmann or Noureddini and Borck. In any event, even if the substitution were made, the mixer of Assmann or Noureddini would be at most substituted for the mixing vessel of Bam and not the reaction vessel 22, and Borck's homogenization apparatus for at most be applied to the mixing vessel of Bam.

Still further, whether or not it would have been obvious combine the disclosures of Kiehtreiber and Muraldihara with Bam and Assmann or Noureddini, no combination of

these documents would arrive at Applicants' disclosed and claimed invention for the reasons set forth above.

Thus, Applicants respectfully submit that the only teaching or suggestion that would lead one having ordinary skill in the art to arrive at Applicants' invention is within Applicants' disclosure, and the use of such disclosure by the Examiner is improper. In order to support the conclusion that the claimed invention is either anticipated or rendered obvious over the prior art, the prior art must either expressly or inherently teach the claimed invention or the Examiner must present a convincing line of reasoning why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. Ex parte Clapp, 227 U.S.P.Q. 972 (B.O.A. 1985).

Additionally, each of the dependent claims is patentable over the prior art of record in view of the fact that each of these dependent claims includes the limitations of independent claim 1. Moreover, each of the dependent claims is patentable over the prior art of record because it would not have been obvious to one having ordinary skill in the art to incorporate such dependent claim features into the invention as more broadly recited in independent claim 1.

Accordingly, the rejections should be withdrawn as improper, and all of the claims should be indicated as allowable over the prior art of record.

CONCLUSION

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the objections and rejections of record, and allow each of the pending claims.

Applicants therefore respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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